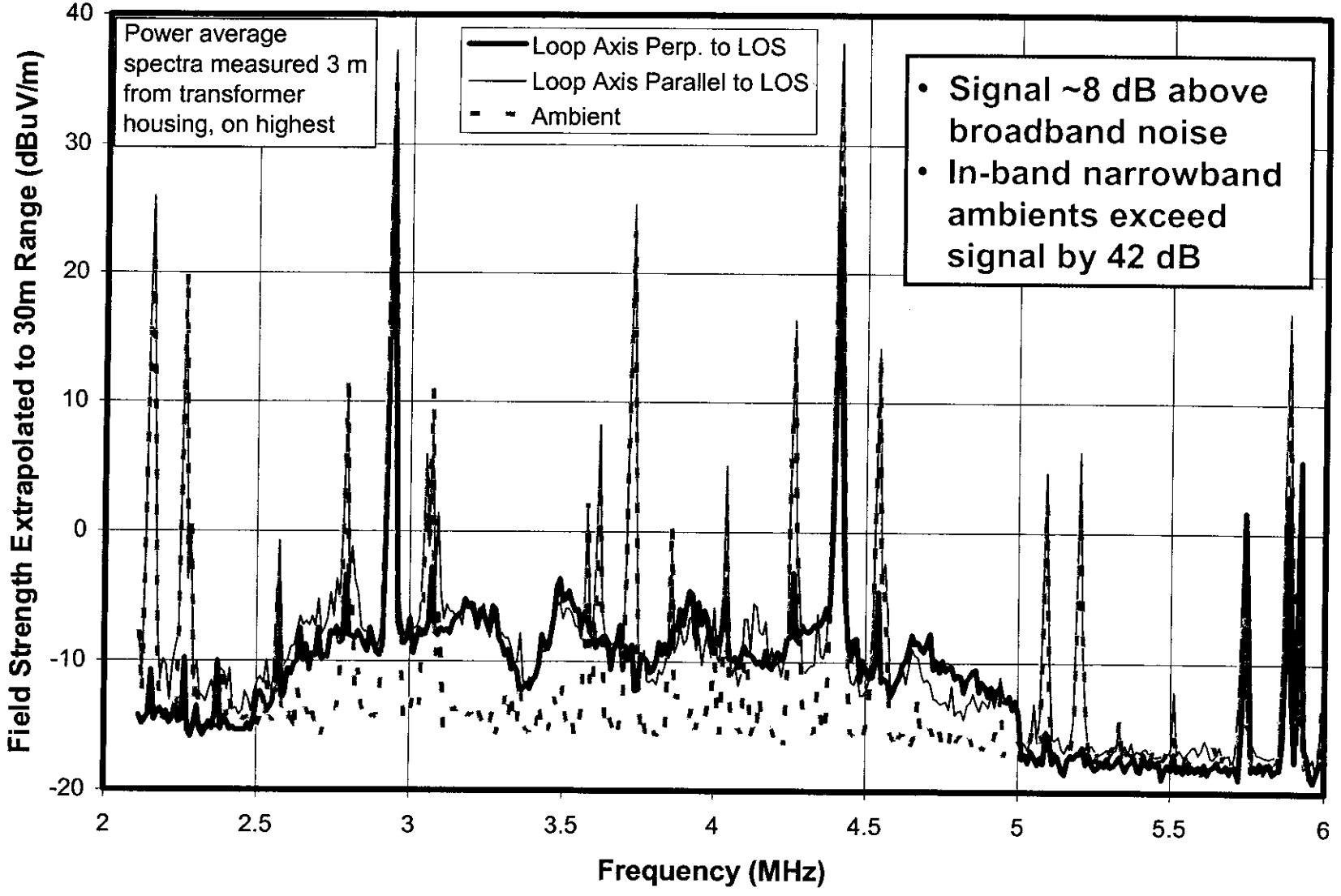
Average Spectra of DUT A3

FCC Laboratory



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Quasi Peak of DUT A3

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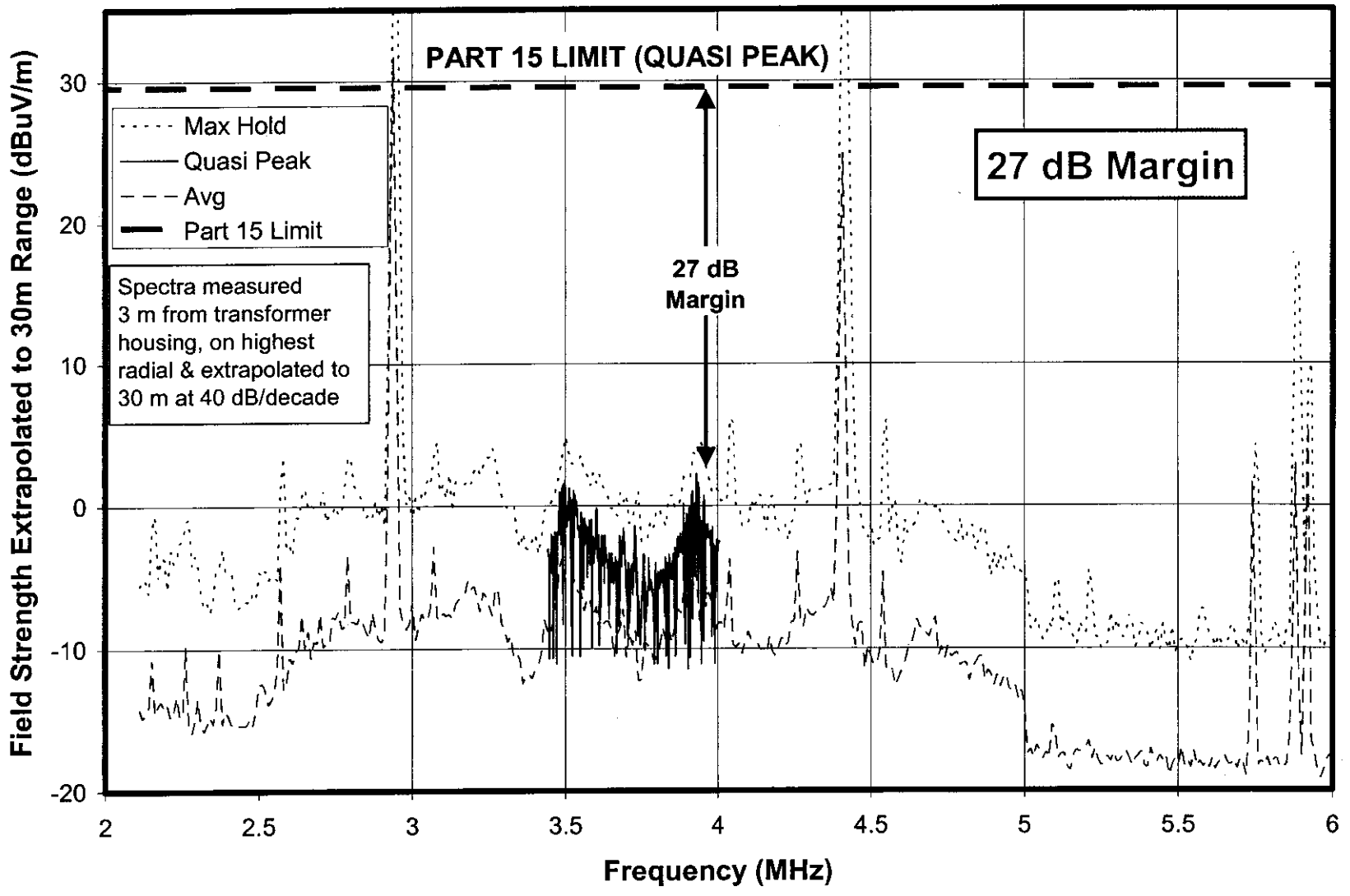

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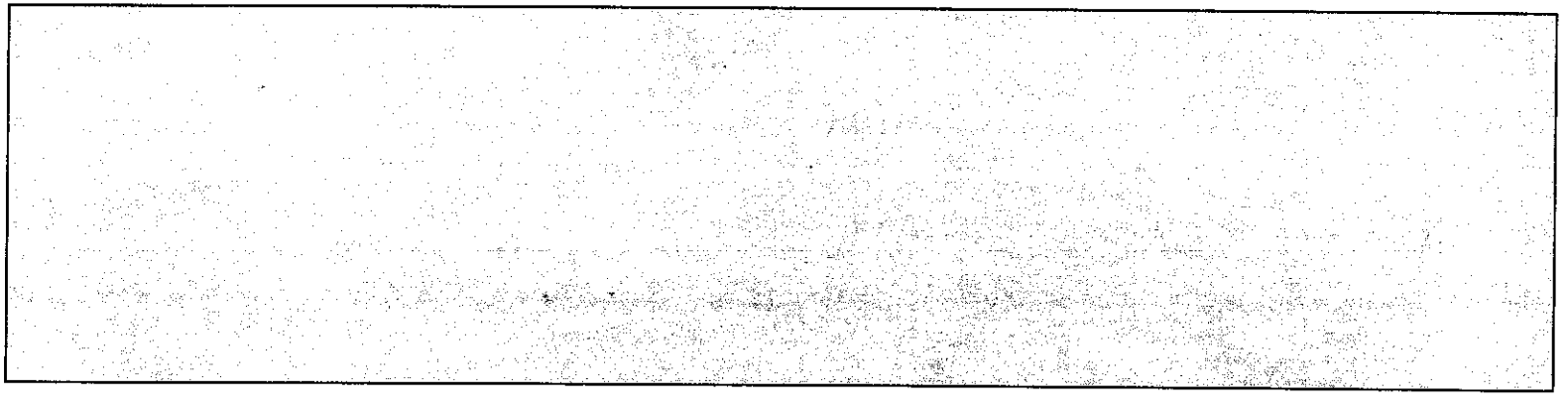
Conclusions Regarding Amperion

FCC Laboratory

- **Compliance**
  - Overhead devices (Injector and Extractor)
    - Measurements were within limits
      - Maximum observed radiated emission below 30 MHz in the intended band of operation was
        11 dB below the Part 15 quasi-peak emission limit devices for underground wiring
  - Ground-based device (Repeater)
    - Measurements were within limits
      - Maximum observed radiated emission below 30 MHz in the intended band of operation was
        27 dB below the Part 15 quasi-peak emission limit



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Recommendations for Amperion

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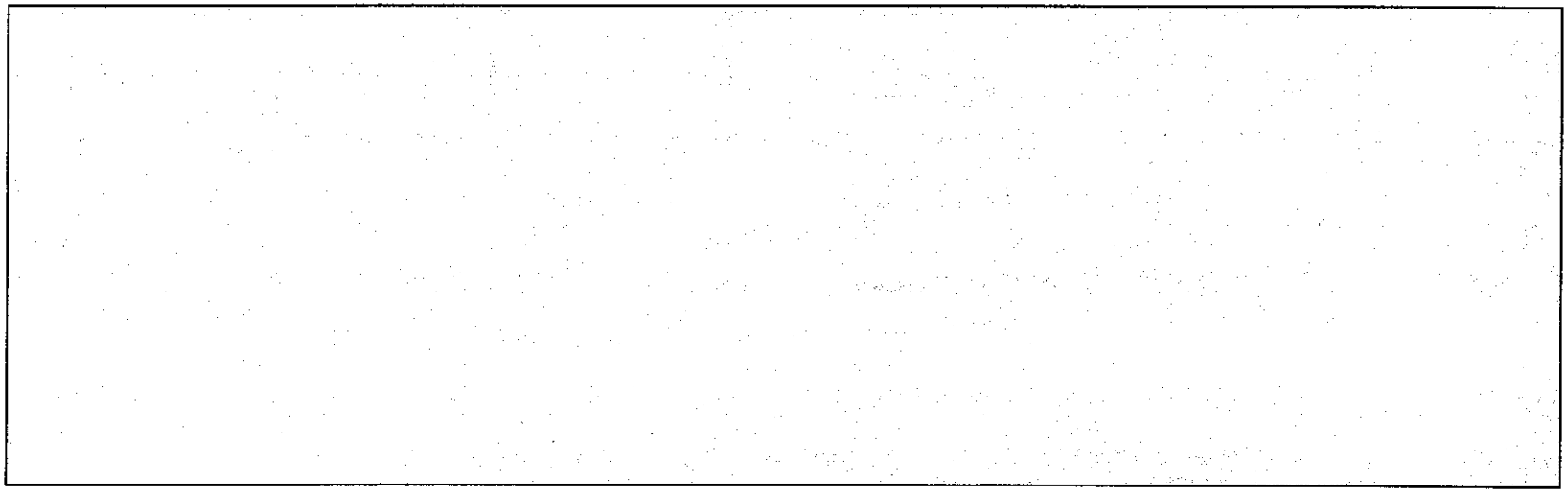

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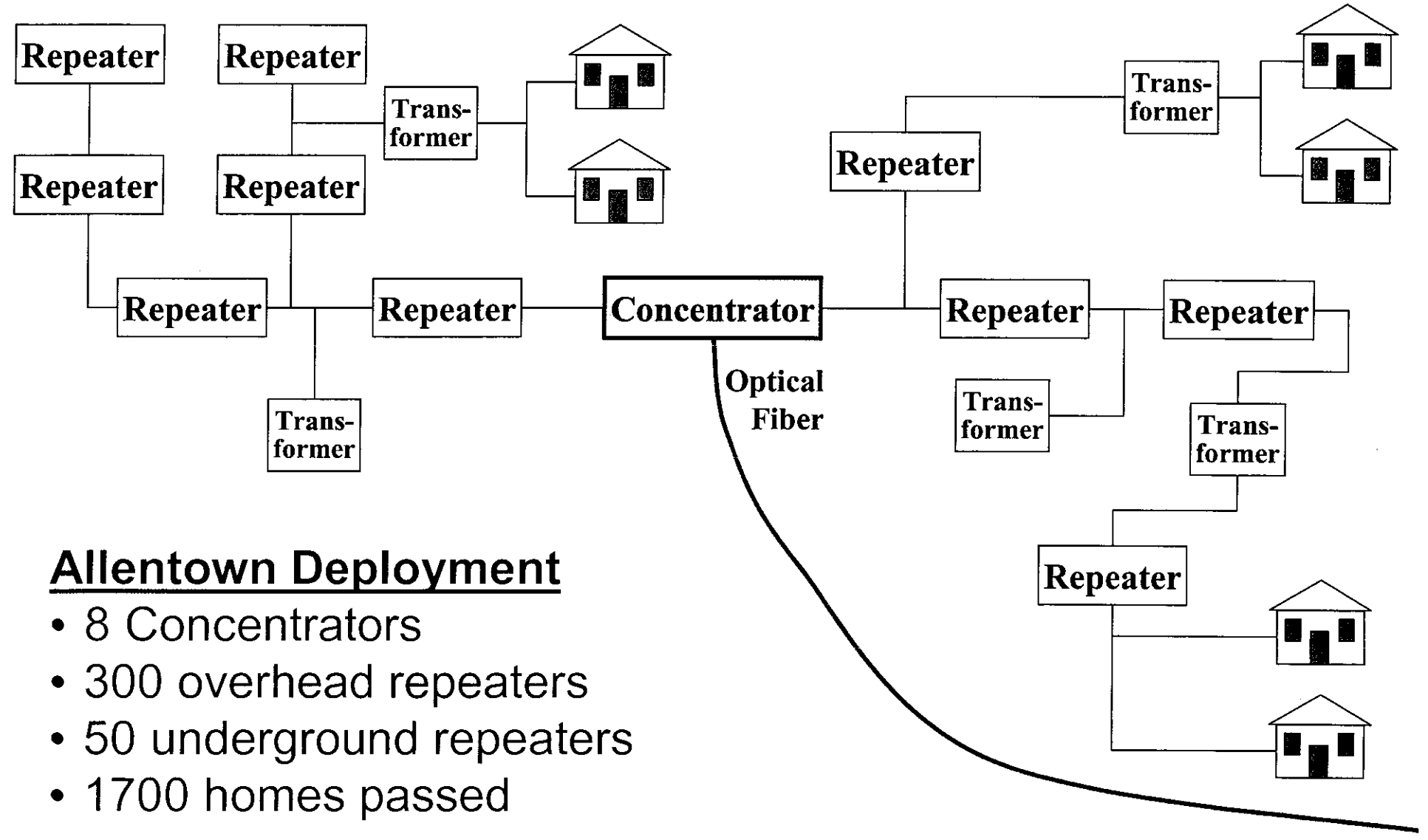
Main.Net

Main.Net's Architecture



Allentown Deployment

- 8 Concentrators
- 300 overhead repeaters
- 50 underground repeaters
- 1700 homes passed

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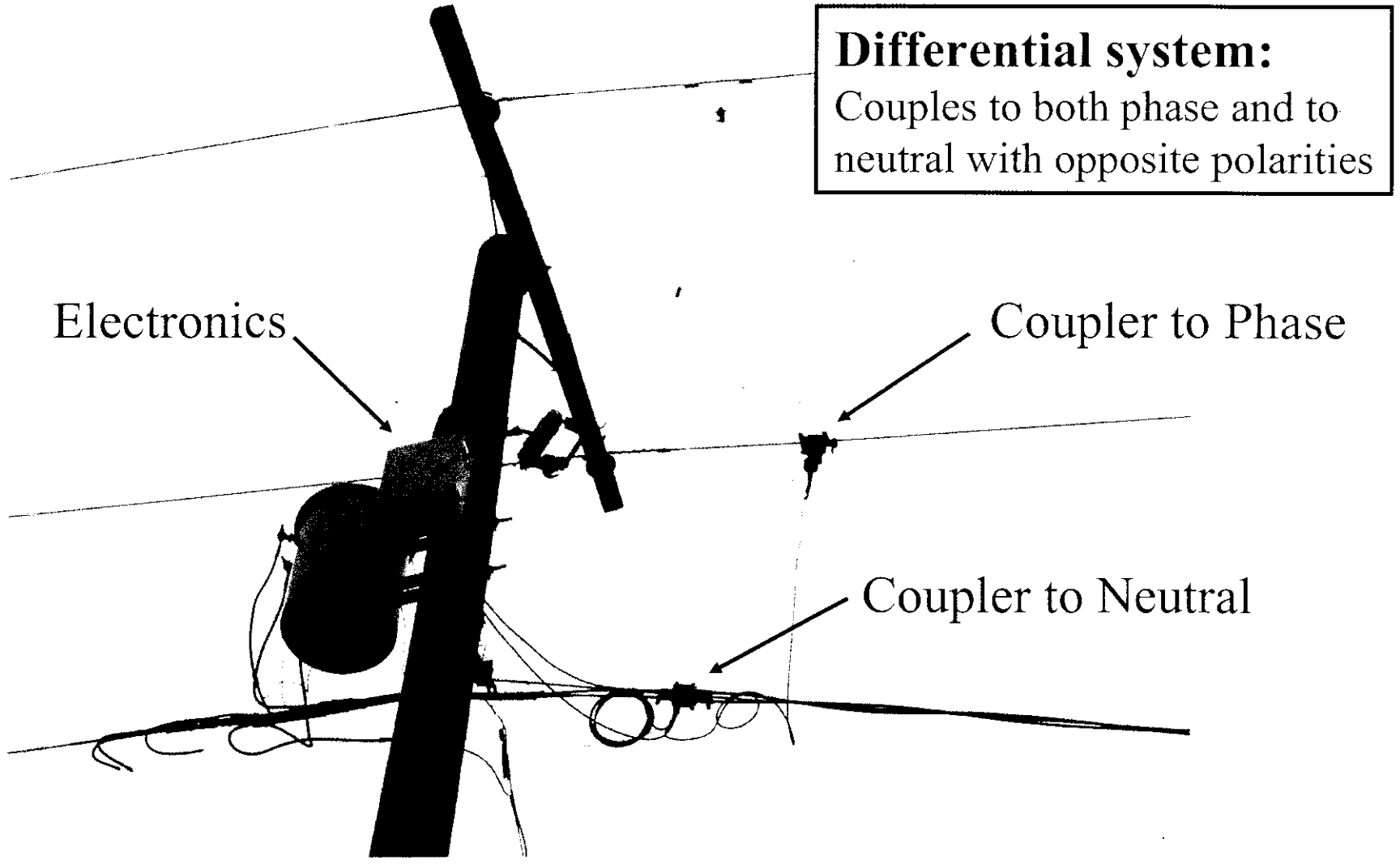
Main.Net Overhead System

Main.Net Overhead Repeater (DUT M1)



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Main.Net Overhead Repeater (DUT M1)

Ambients and BPL Signal at Two Polarizations

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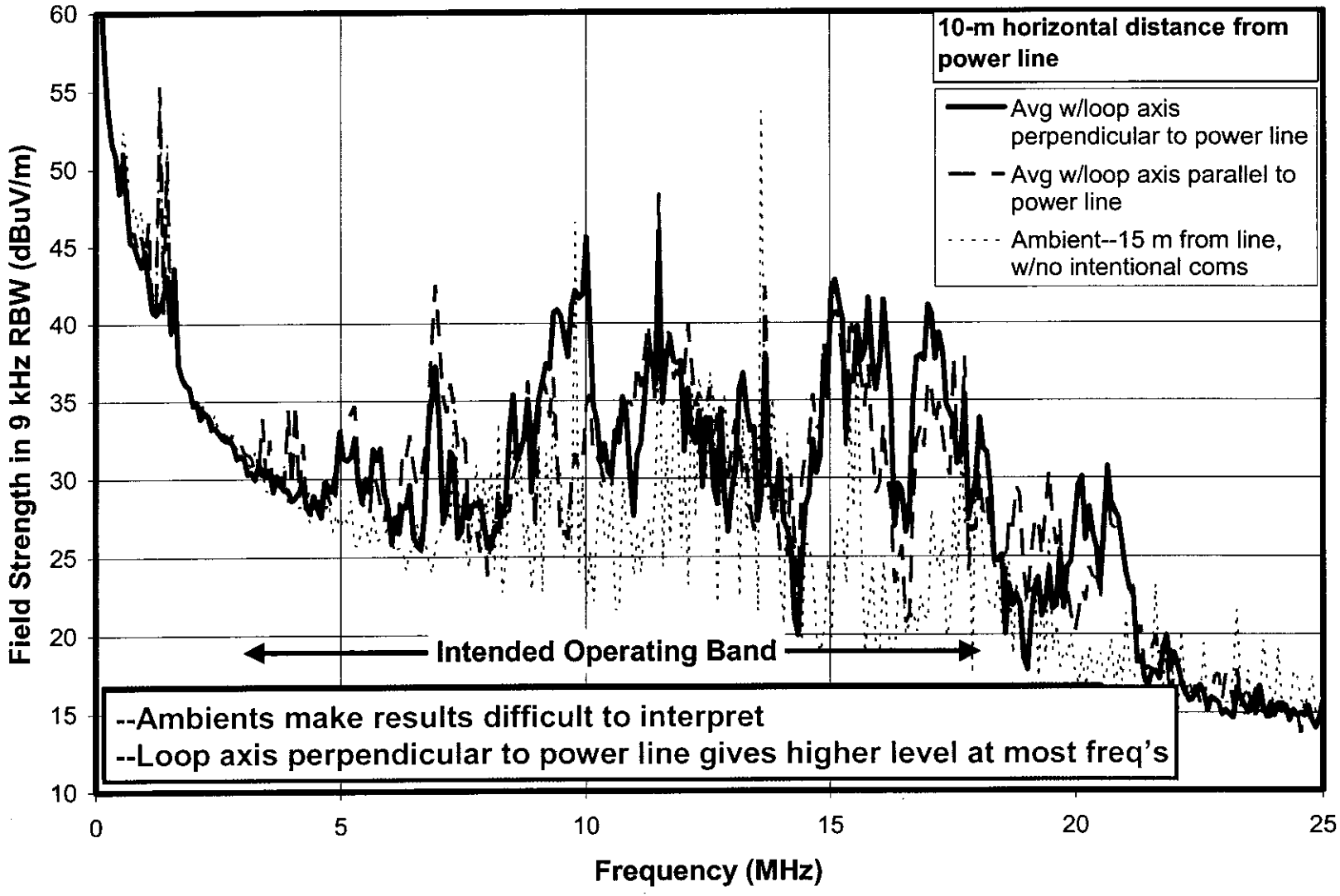

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Temporal Measurements

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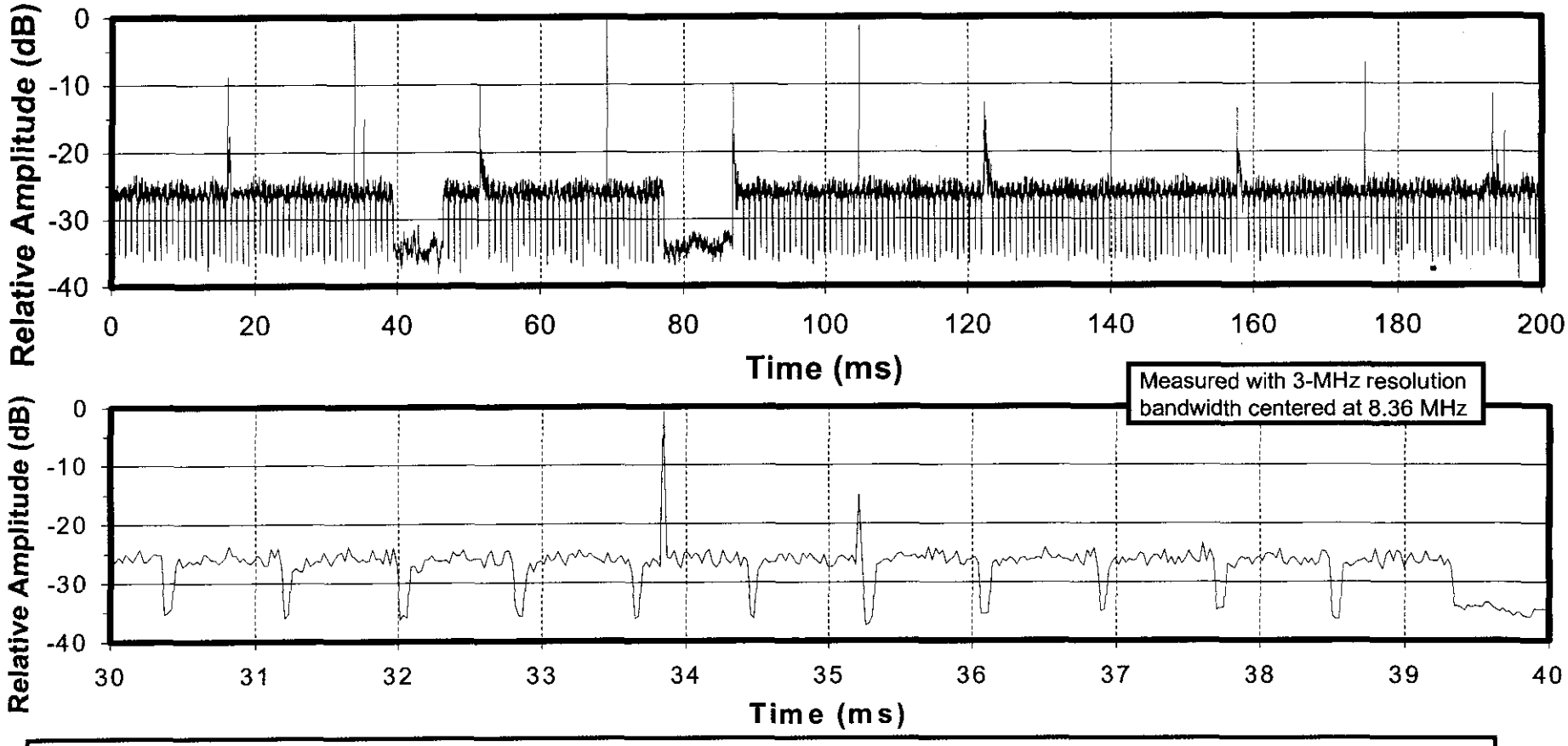

- Duty factor of primary signal was 85%
- Required 20 Hz pulse rate for quasi peak was achieved
- Source of higher level pulses 17.7 ms intervals was not determined, but did not impact quasi peak measurements

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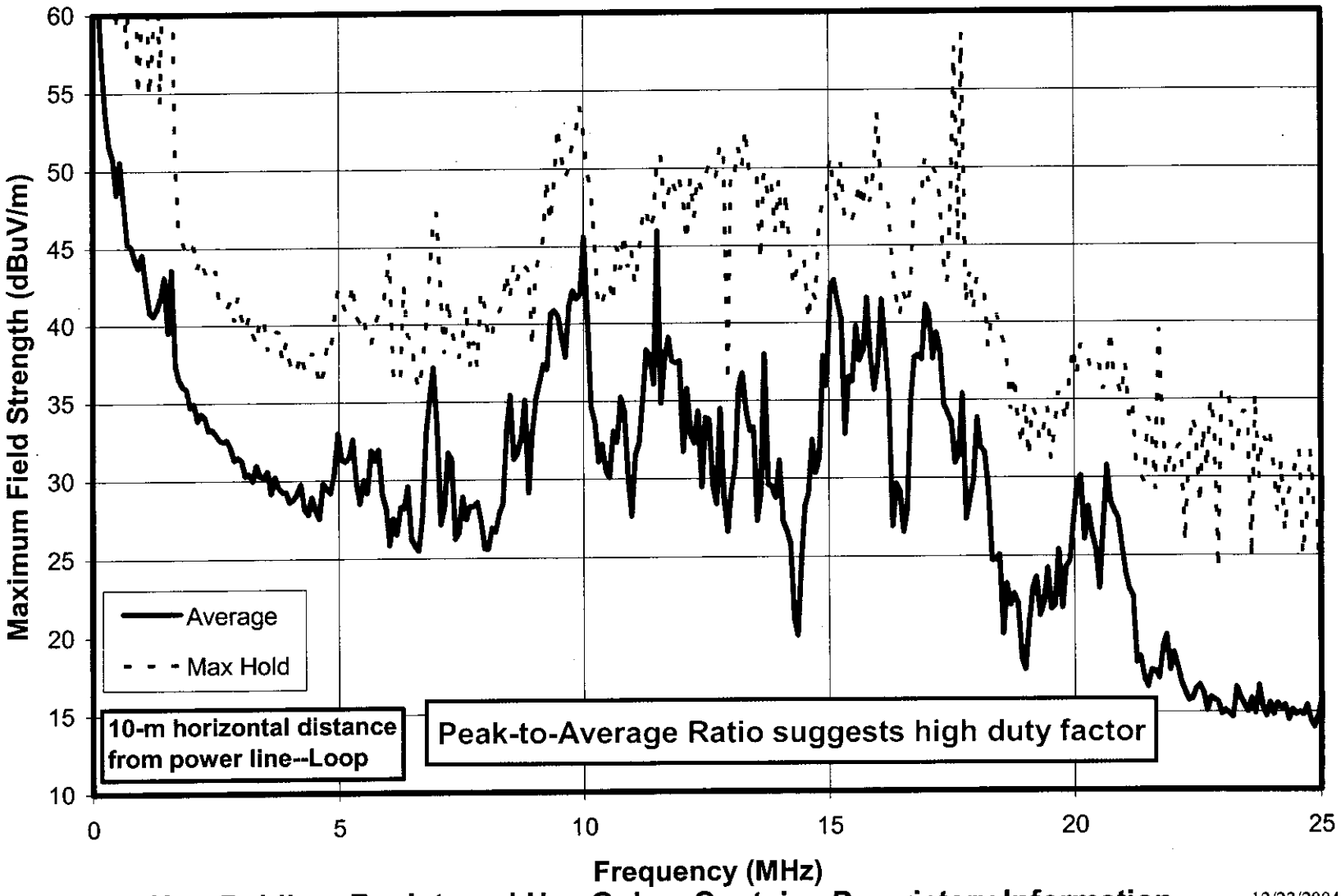
Average and Peak



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Moving Down the Line Under the Line

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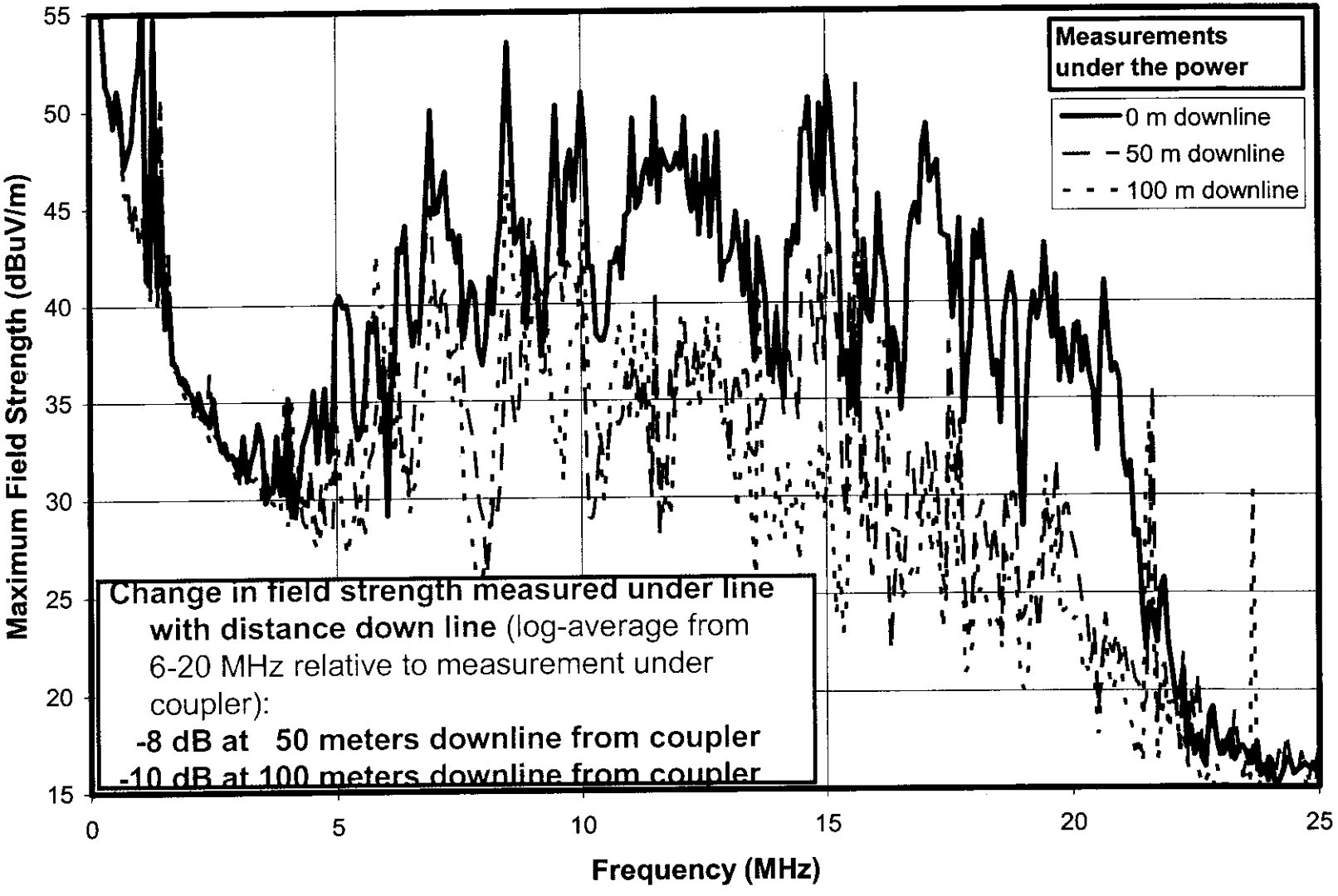

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Moving Down the Line 10 m to the Side

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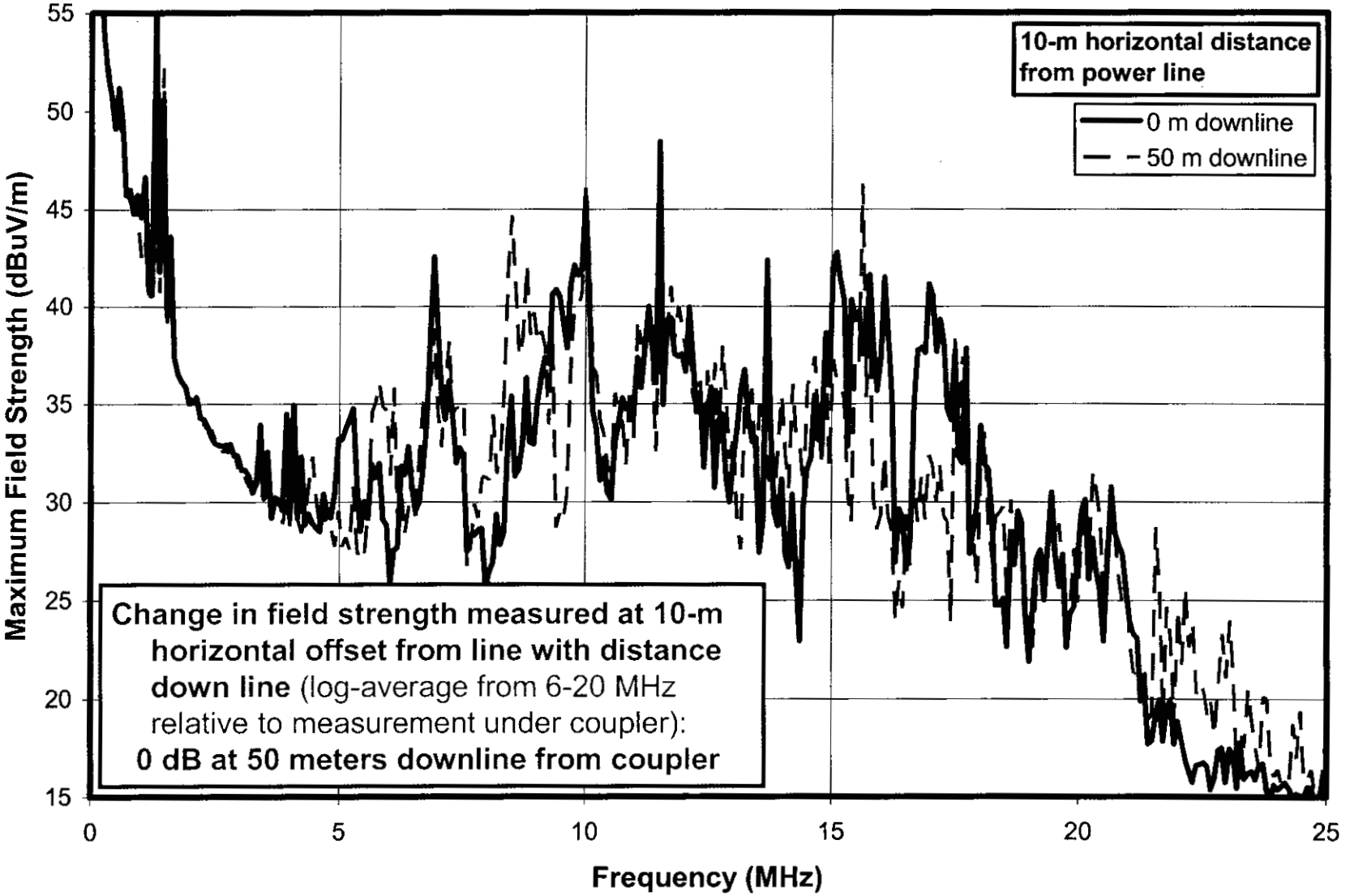

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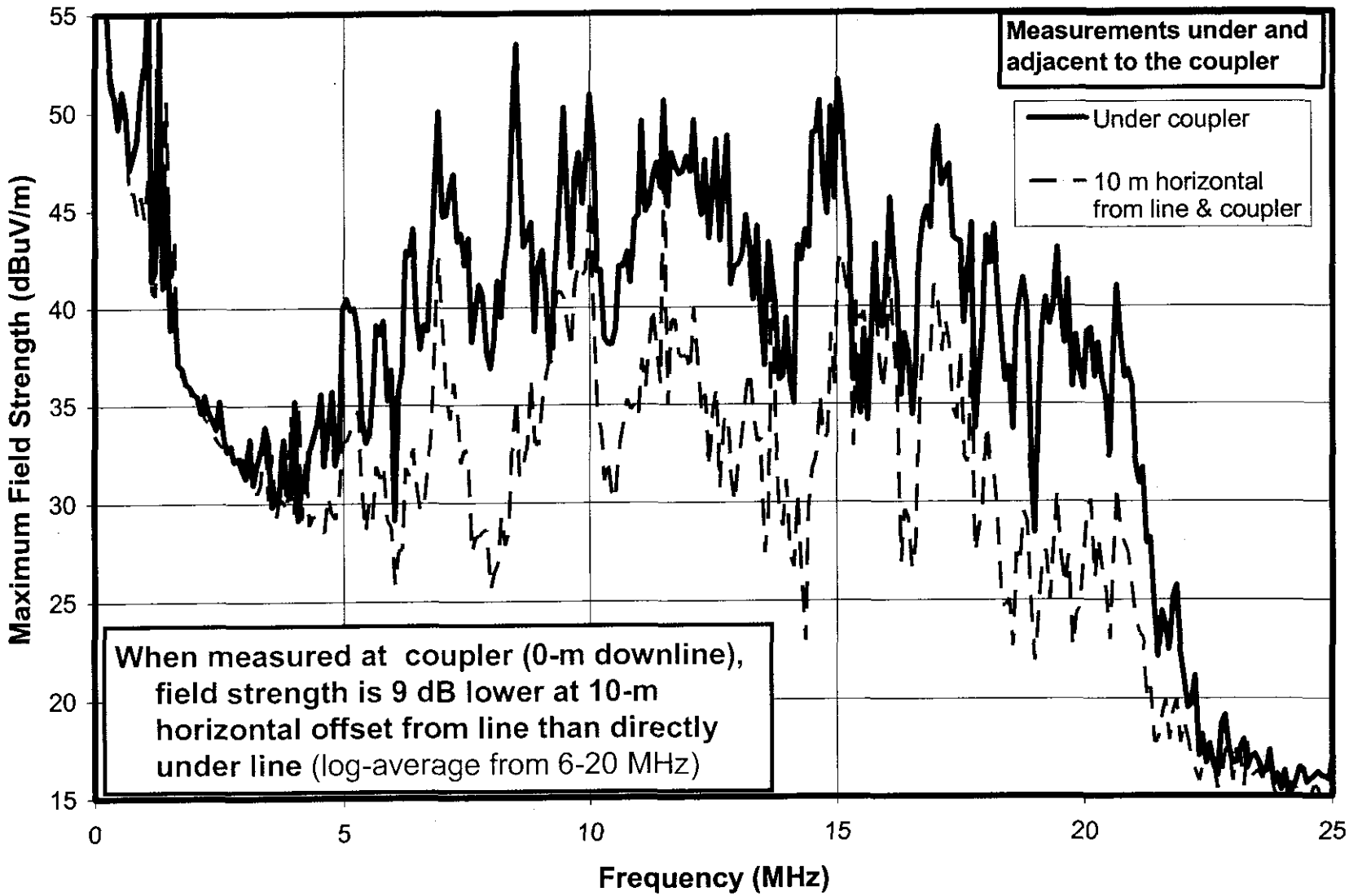
Under and Adjacent to the Coupler



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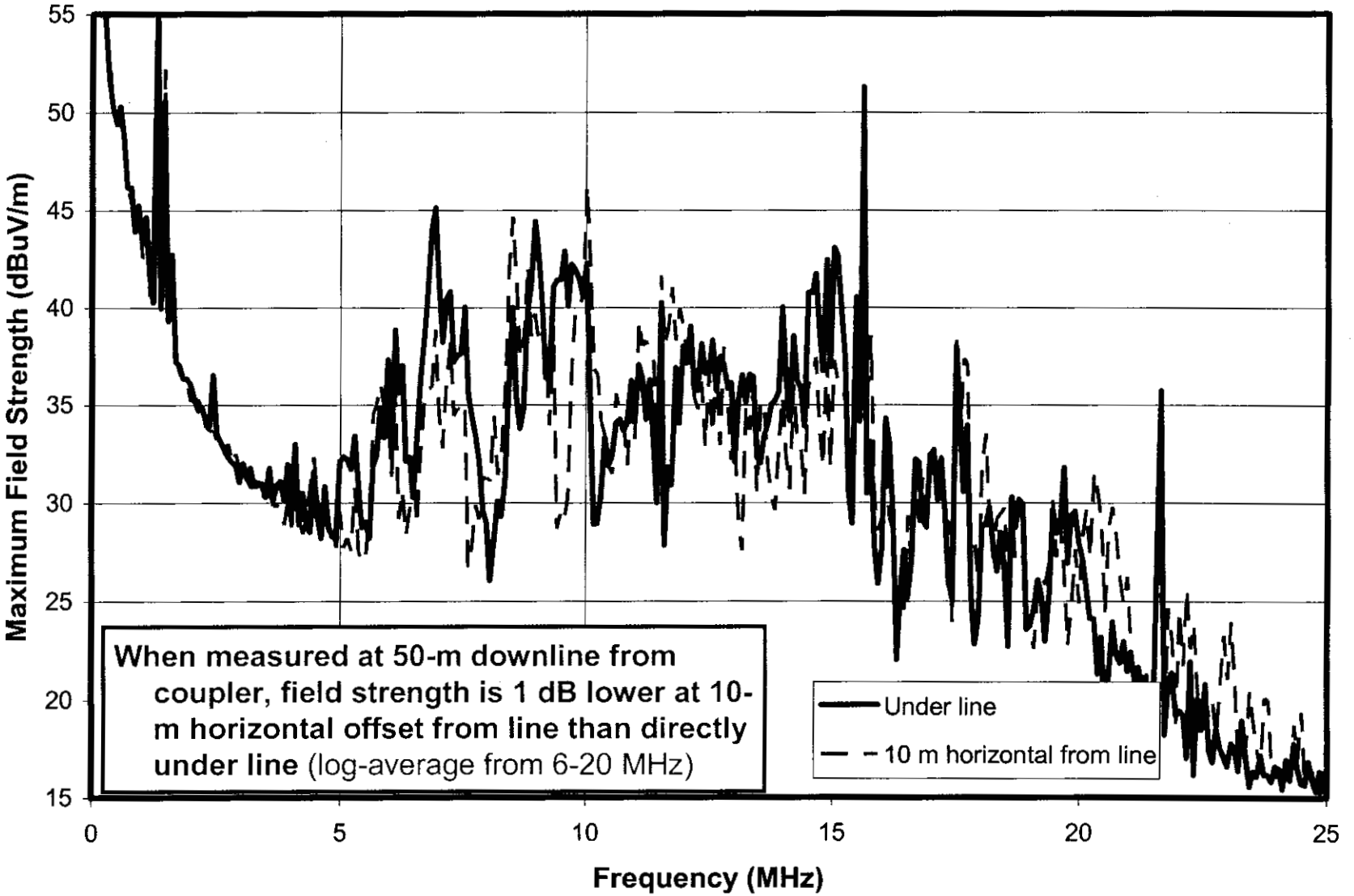
Under & 10 m to the Side, 50m Down Line



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Summary of Relative Average Levels

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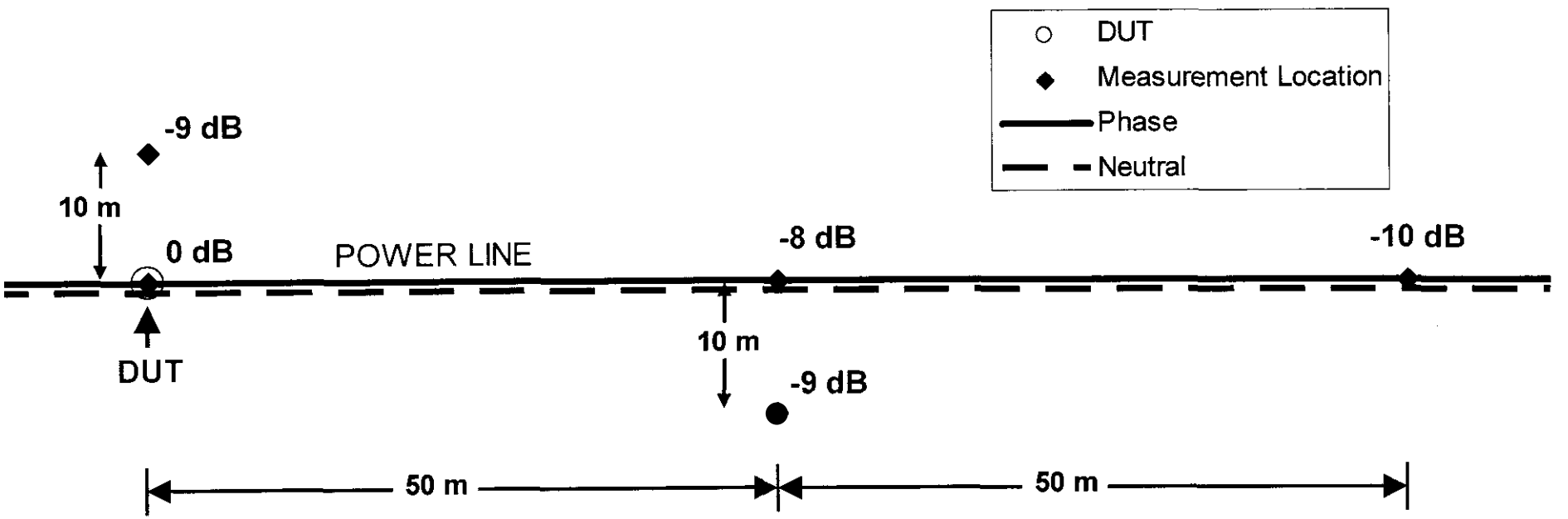

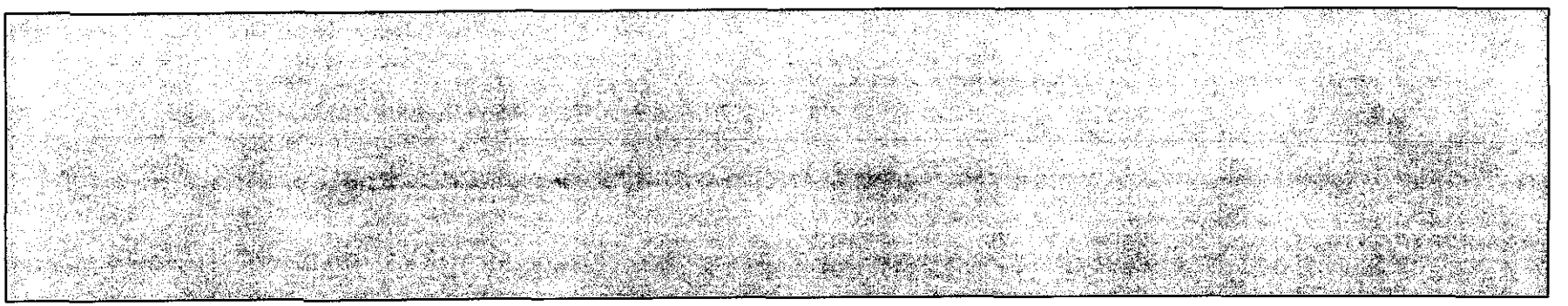

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Quasi Peak

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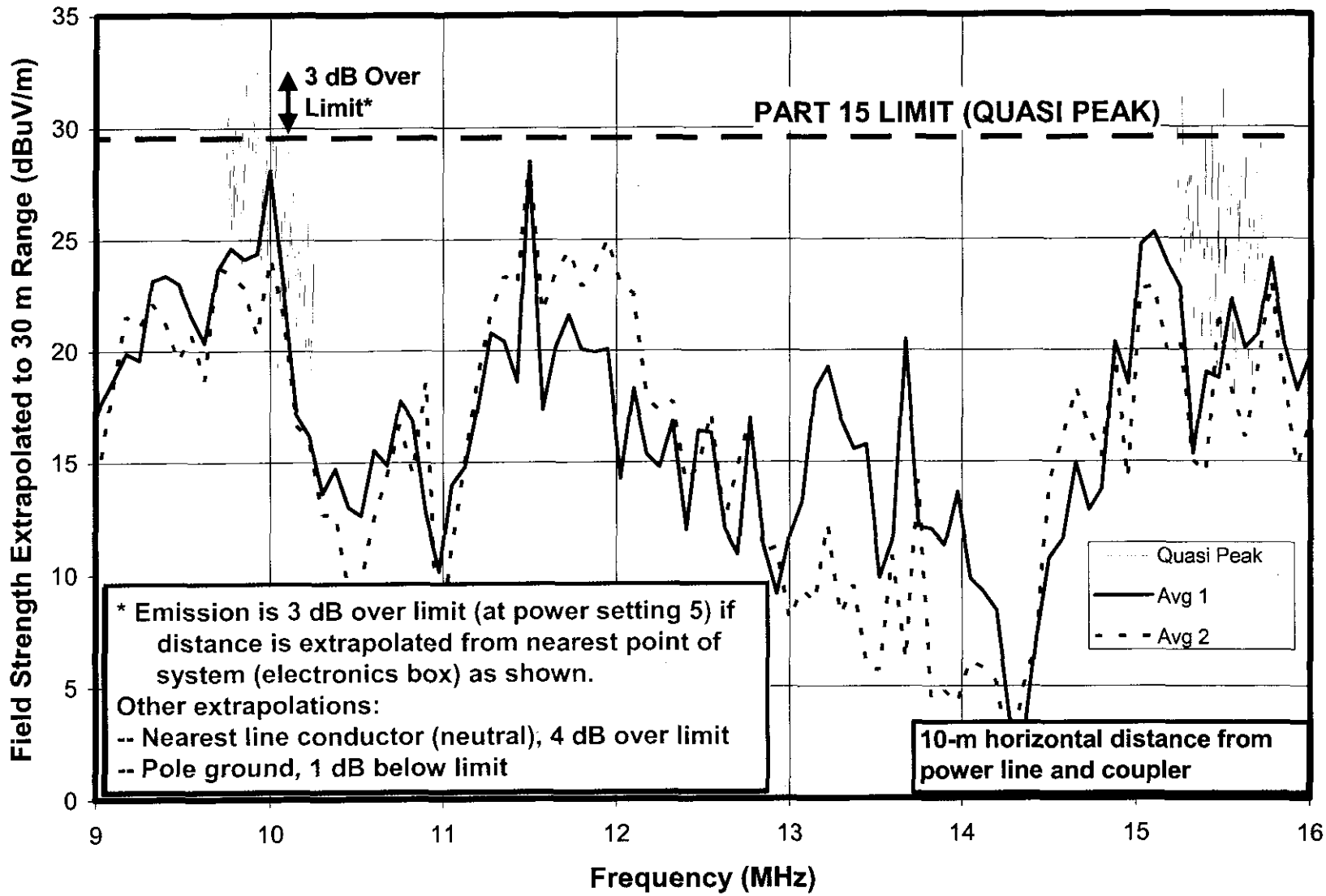

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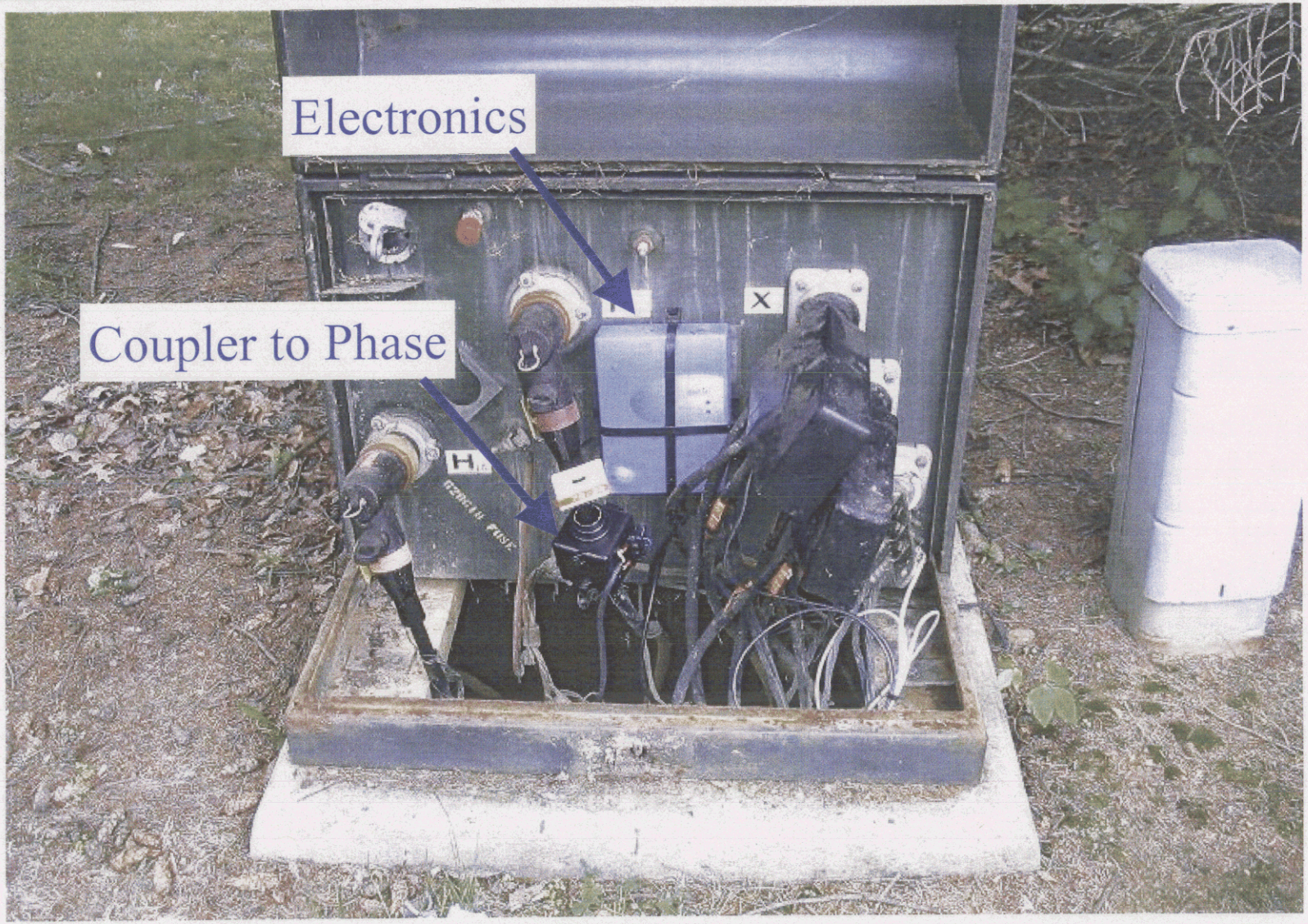
Main.Net
Ground-Based System

Main.Net Overhead Repeater (DUT M1)



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Main.Net Ground-Based Repeater (DUT M2)

- Tested at 10 m distance
- Tested 6 radials and selected two for quasi peak processing: radial w/highest emission (over power cable) and radial w/highest emission but not near power cable (as shown)

Effect of Buried Power Cable

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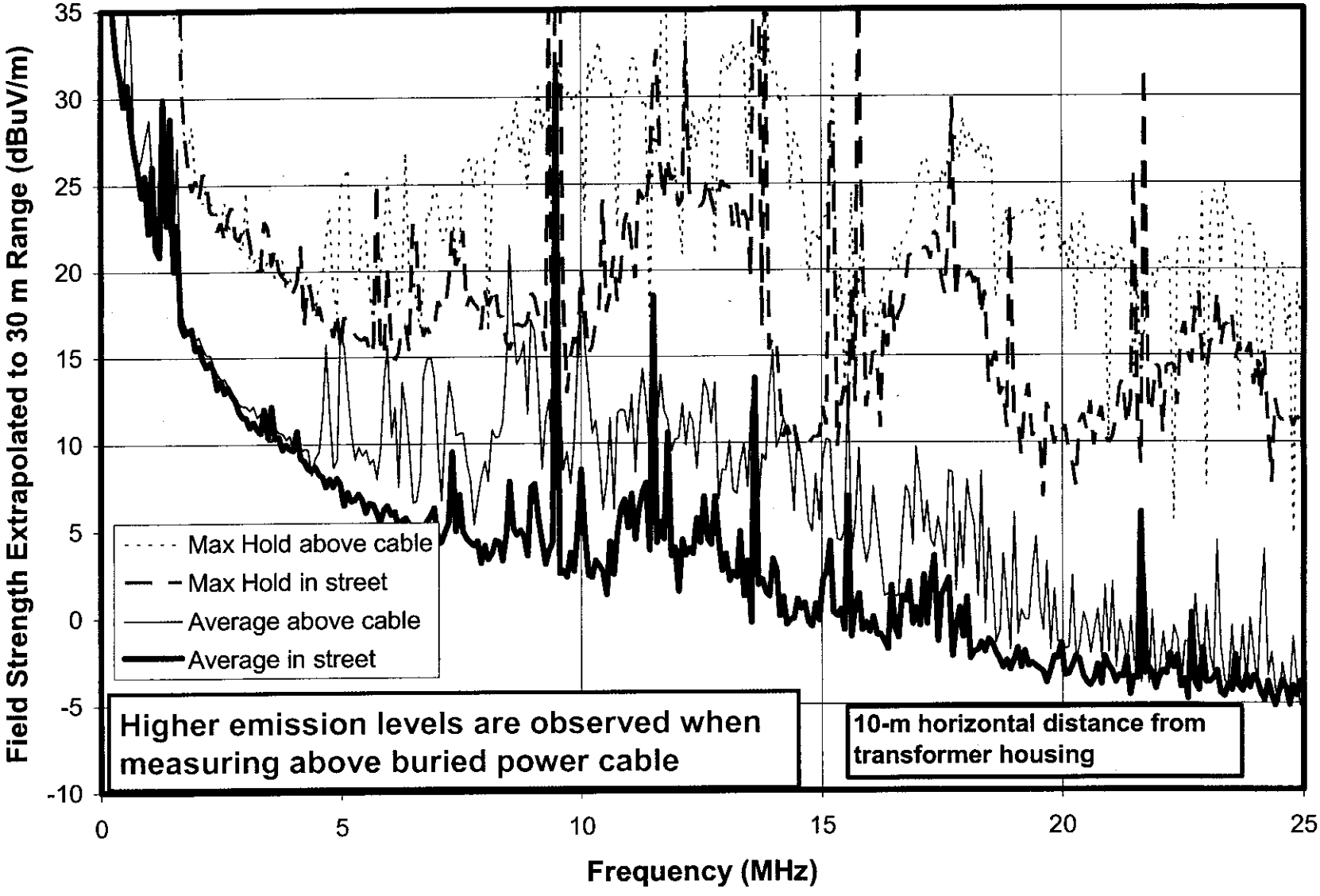

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Quasi Peak Above Buried Power Cable

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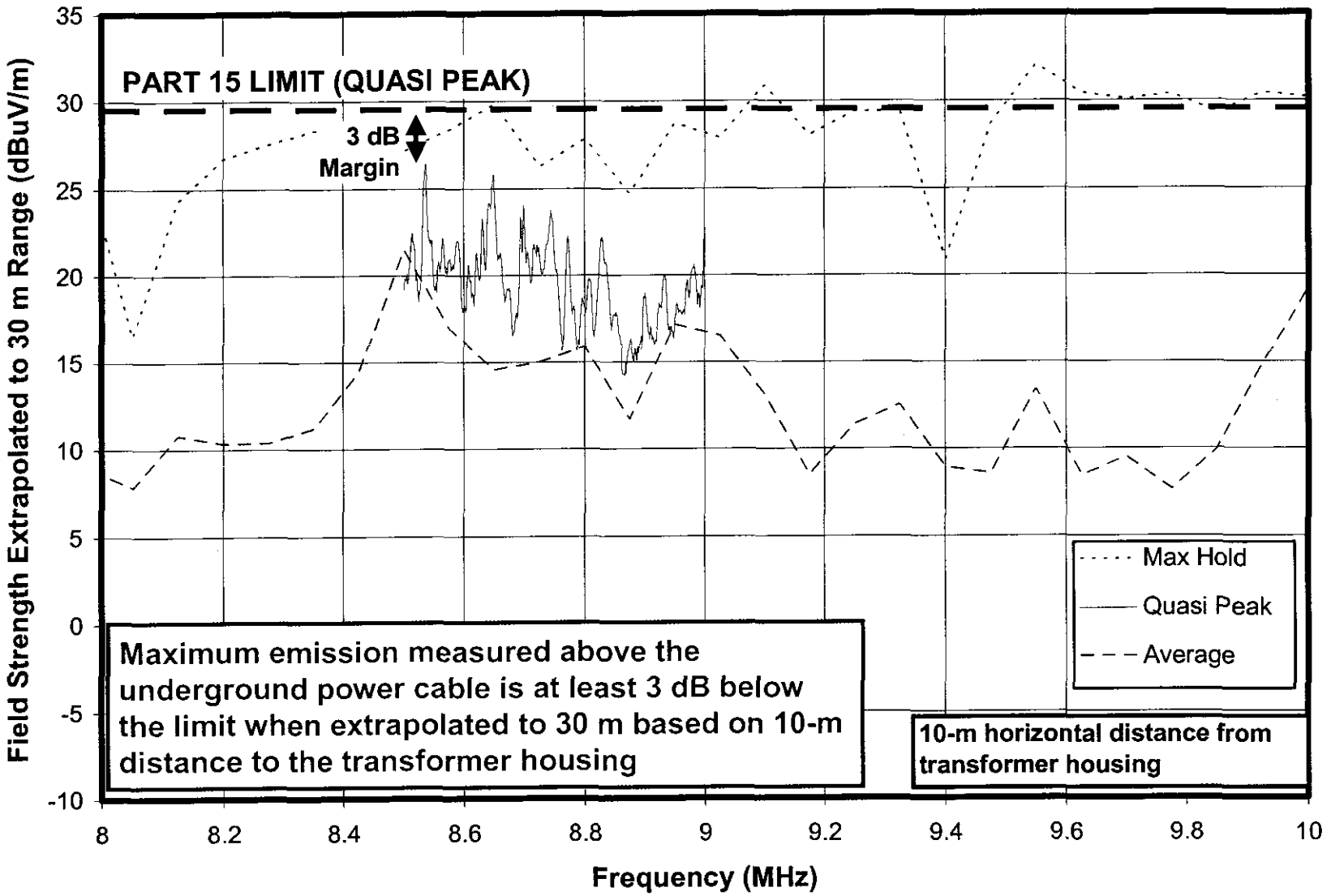

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Quasi Peak away from Buried Power Cable

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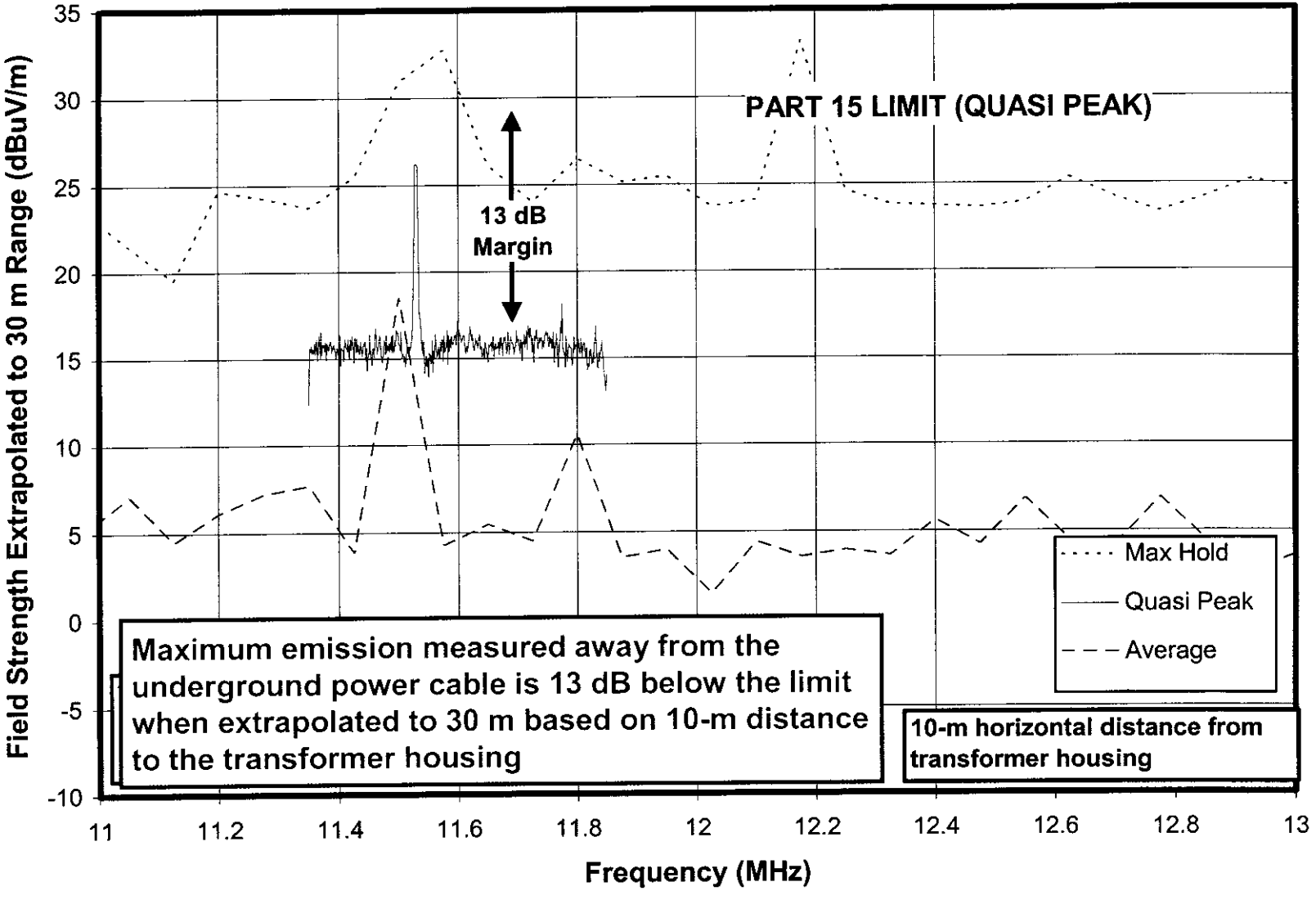

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Conclusions Regarding Main.Net

- **Compliance**
  - Overhead device (Repeater on medium voltage lines)
    - Measured emissions exceeded the Part 15 limit
      - Maximum observed radiated emission was 3 dB over the limit
      - Tested unit was said to be set to power level 5. Submitted test report was based on power level 4
      - If distance scaling were based on distance to the pole ground wire rather than the nearest part of the BPL system [redacted] measurements would have passed with 1 dB margin at the selected quasi-peak measurement location
  - Ground-based device (Repeater on medium voltage lines)
    - Measurements were within limits
      - Maximum observed radiated emission was 13 dB below the Part 15 limit when measured in the street
      - Maximum observed radiated emission was 3 dB below the Part 15 limit when measured over the buried power cable
- **Caveats**
  - Measurements were not intended to ensure compliance
    - Testing was limited to intended operating bands of devices. Compliance was not tested over the full range of frequencies required by rules.
    - Testing was not performed on 3 installations or over a full set of radials
    - No conducted testing was performed

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